FIG. 1

Sequence	MB DNA (%)	EC DNA (%)	fold (MB/EC)
GGCGCC=	0.1462	0.0020	73.12
GCCGGC=	0.2317	0.0062	37.19
GTCGAC=	0.0990	0.0116	8.56
CTCGAG=	0.0299	0.0038	7.96
CCCGGG=	0.0645	0.0091	7.13
CACGTG=	0.0205	0.0030	6.74
CCCGAG=	0.0451	0.0069	6.58
CTCGGG=	0.0392	0.0068	5.75
GCCGAC=	0.1435	0.0297	4.83
GTCGGC=	0.1400	0.0295	4.74
CTCGGC=	0.1021	0.0217	4.71
GCCGAG=	0.1000	0.0218	4.58
GACGAG=	0.0493	0.0120	4.10
GCCGCG=	0.1781	0.0435	4.09
GACGTC=	0.0619	0.0151	4.09
GTCGAG=	0.0677	0.0166	4.08
GTCGTC=	0.0755	0.0192	3.93
CTCGAC=	0.0643	0.0165	3.90
CCCGAC=	0.0676	0.0175	3.86
CTCGTC=	0.0501	0.0130	3.86
CGCGGC=	0.1751	0.0455	3.85
GTCGGG=	0.0627	0.0165	3.79
TCCGAG=	0.0203	0.0054	3.78
GACGAC=	0.0747	0.0199	3.76
CTCGGA=	0.0202	0.0054	3.73
GCCGCC=	0.2336	0.0654	3.58
GCCGTC=	0.1008	0.0296	3.41
GGCGGC=	0.2237	0.0662	3.38
GCCGGT=	0.1302	0.0402	3.24
CCCGGC=	0.1183	0.0365	3.24
GACGGC=	0.1033	0.0327	3.16
CCCGCG=	0.0824	0.0263	3.13
GCCGGG=	0.1165	0.0373	3.13
CGCGGG=	0.0849	0.0273	3.11
ACCGGC=	0.1242	0.0405	3.07
GGCGGG=	0.0982	0.0323	3.04
CCCGCC=	0.0995	0.0329	3.02
CGCGGT=	0.1117	0.0372	3.00
ACCGCG=	0.1090	0.0368	2.97
ACCGAG=	0.0511	0.0175	2.92
GTCGGA=	0.0331	0.0118	2.80
GGCGAC=	0.1005	0.0360	2.80
CTCGGT=	0.0494	0.0178	2.78
GTCGCC=	0.1056	0.0383	2.76
GTCGCG=	0.0884	0.0323	2.74
CACGTC=	0.0430	0.0158	2.73
TCCGAC=	0.0326	0.0121	2.70
CGCGAC=	0.0852	0.0320	2.66
Average	0.0498	0.0288	
Sum	12.7440	7.3665	

FIG. 2

a)

MB-ODN 4/5 (-CGXXCGXXXCG-)

No.	Sequence	Score
1	CTCCAeqGGeqGCAeqGCCA	11811
2	TGTCTeqGGeqGCAeqGTTG	11773
3	CAAGGeqGTeqGCTeqATGG	11538
4	AACTGeqGAeqTGGeqGCAG	10931
5	GTCAGeqGAeqTGGeqGCTC	10829
6	AAAGGeqTGeqGGTeqGCCC	10697
7	CTCAGeqGGeqGCAeqTGCA	10670
8	CACAAeqGGeqCCTeqGCTT	10319
9	ATGAAeqGGeqGCTeqAGCC	10240
10	GATGGeqATeqGCAeqCCCA	10199
11	CAGCAeqTGeqTGGeqGCAT	9962
12	GCTGGeqGGeqAGGeqATTC	9855
13	TGTTGeqCTeqGCTeqGCAG	9839
14	GGTGGeqGTeqAGGeqCTCT	9728
15	GGTGGeqCAeqCCTeqGCCC	9259
16	GGGGGeqGTeqCCTeqCTAA	9250
17	GACATeqGTeqGCAeqTCAG	9098
18	CCAGTeqGGeqGGGeqCTGG	9022
19	TCTGGeqGTeqAAGeqGCCC	8953
20	CAACTeqATeqGGGeqCCCA	8878
21	TTTGGeqGTeqGTGeqCAGC	8869
22	CCAGGeqGTeqGTGeqCAGG	8869
23	CTCCTeqGTeqAGGeqGTGG	8844
24	ACCATeqGGeqCCAeqTCTC	8780
25	CAACAeqATeqTGTeqGCTG	8615
393	GTGTTeqAAeqCTAeqAACC	1681
394	AAGTAeqAAeqATGeqAGAA	1637
395	ACTAGeqTAeqCAGeqAATC	1539

b)

MB-ODN 5/5 (-CGXXXCGXXXCG-)

No.	Sequence	Score
1	TGCTeqTGGeqGCTeqGCAG	12868
2	GAGGeqGCTeqGTGeqGGTC	12599
3	TTGGeqGCAeqCAAeqCCTC	11345
4	GAAGeqTTGeqGGGeqGCCC	11280
5	AAGGeqTGGeqGCTeqTGGA	11258
6	CAGGeqATGeqCCTeqGCTC	10614
7	GTTGeqGGAeqAGTeqGCAT	10297
8	GGGGeqGGTeqACTeqACCA	10243
9	TGGTeqGGGeqGGTeqACTC	10153
10	ATCAeqCTAeqGGGeqGCCA	10063
11	GTGGeqCCAeqAGTeqACAT	10059
12	AAGGeqGCTeqCATeqATGG	10036
13	GAGGeqGGGeqGGTeqATCT	9743
14	AATTeqTGGeqGCTeqTGCA	9712
15	CAGGeqGTGeqGTGeqGCAT	9657
16	TAGGeqCTTeqAGTeqGCAC	9655
17	GTGAeqTCAeqGGTeqGCAG	9390
18	GCTTeqAGTeqGCAeqCCAG	9269
19	GTGTeqGGGeqAGGeqACCA	9164
20	TTGGeqTTGeqTGTeqGCCT	9034
21	TCATeqATGeqGGGeqCCAC	8959
22	GAGGeqGGGeqGGGeqGAGA	8873
23	TAGGeqATGeqCAGeqCCTG	8845
24	CAGGeqGTGeqGCAeqCAGT	8703
25	CTGAeqCCTeqGCTeqAGCT	8642
352	ATTAeqCTGeqAAAeqCAGT	1807
353	TAATeqGAAeqTAAeqATCC	1713
354	CATGeqTAAeqTTAeqGAAA	1219

FIG. 3

a)

MB-ODN 4/5 (-CGXXCGXXXCG-)

ODN	Sequence
MB-ODN4/5-1	CCAGTCGGGCGGGGCGCTGG
MB-ODN4/5-2	GCTGGCGGGCGAGGCGATTC
MB-ODN4/5-3	ACCAGCGGGCGAGTCGCCTG
MB-ODN4/5-4	GGTGGCGGGCGTTGCGCATC
MB-ODN4/5-5	GGCAGCGGGCGCATCGCCAG
MB-ODN4/5-6	CTTGGCGGGCGCTGCGACCA
MB-ODN4/5-7	AACTGCGGACGTGGCGGCAG
MB-ODN4/5-8	GGTCACGGTCGGATCGATTC
MB-ODN4/5-9	TTTGGCGGTCGGTGCGCAGC
MB-ODN4/5-10	GGTGGCGGTCGAGGCGCTCT
MB-ODN4/5-11	GGTGGCGGTCGAGGCGCTCT
MB-ODN4/5-12	TTTGTCGGTCGCAACGAAAA
MB-ODN4/5-13	GATGTCGAGCGGATCGGCAC
MB-ODN4/5-14	TTGCTCGAGCGGTTCGGCAT
MB-ODN4/5-15	TTGGTCGAGCGTGTCGGGTG
MB-ODN4/5-16	AGCATCGAGCGCAGCGTGGT
MB-ODN4/5-17	GGCAGCGAGCGCAACGACAC
MB-ODN4/5-18	CTCATCGAGCGCCACGGCAG
MB-ODN4/5-19	ATGCTCGAGCGCCTCGGCCC
MB-ODN4/5-20	GGCTTCGAACGGGTCGAGGG
MB-ODN4/5-21	GATGGCGAACGTGACGTCAT
MB-ODN4/5-22	CTTGTCGAACGTCTCGGCCA
MB-ODN4/5-23	GAGATCGAACGCTTCGACAC
MB-ODN4/5-24	CAGTTCGATCGAGACGACCC
MB-ODN4/5-25	GTAGGCGATCGATGCGCCAA
MB-ODN4/5-26	CAACACGATCGTGTCGGCTG
MB-ODN4/5-27	CTAGGCGATCGCAACGAAGT
MB-ODN4/5-28	CCACACGATCGCCACGGTGG
MB-ODN4/5-29	GGCAGCGTGCGTGACGACTT
MB-ODN4/5-30	TAAGGCGTGCGCATCGATAT
MB-ODN4/5-31	AGCAGCGTTCGTGTCGGCCT
MB-ODN4/5-32	TGTTGCGCACGGTGCGCTGC
MB-ODN4/5-33	CTGGGCGCACGGCACGCTGG
MB-ODN4/5-34	GGCAGCGCACGCAGCGCAAC
MB-ODN4/5-35	GCAGGCGCTCGTCACGCCCC

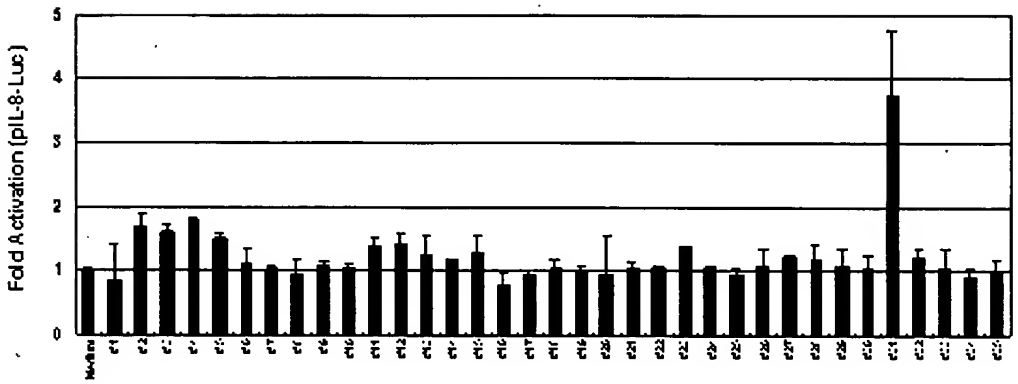
b)

MB-ODN 5/5 (-CGXXXCGXXXCG-)

ODN	Sequence
MB-ODN5/5-1	GATGCGGATCGGTGCGCTGC
MB-ODN5/5-2	CAGGCGGTGCGCAACGCCTG
MB-ODN5/5-3	GATGCGGTGCGCATCGCCAA
MB-ODN5/5-4	GAGGCGGTGCGCCACGTGCT
MB-ODN5/5-5	GCAGCGGCTCGACACGACAA
MB-ODN5/5-6	TGGTCGAGCGCTTGCGGGAC
MB-ODN5/5-7	ACAGCGAGTCGCTGCGCCAC
MB-ODN5/5-8	TAGGCGAAGCGATGCGGCCC
MB-ODN5/5-9	TCAGCGAAGCGGTGCGCCCA
MB-ODN5/5-10	ATCTCGAAGCGCTGCGAGGC
MB-ODN5/5-11	GGGTCGAATCGTGTCGCCTC
MB-ODN5/5-12	TAGGCGATGCGCAGCGCCTG
MB-ODN5/5-13	ATGGCGATGCGCTGCGCCTG
MB-ODN5/5-14	GGGTCGACACGCTGCGATTG
MB-ODN5/5-15	TGCTCGTGGCGGCTCGCCAC
MB-ODN5/5-16	CCAGCGTGGCGATGCGGCCA
MB-ODN5/5-17	GCATCGTGGCGCAGCGCATC
MB-ODN5/5-18	TGGACGTGTCGTAGCGCAGC
MB-ODN5/5-19	CTGGCGTAGCGCCTCGCCT
MB-ODN5/5-20	TTGGCGTTGCGTGTCGCCT
MB-ODN5/5-21	AAATCGTTGCGGCACGCGAT
MB-ODN5/5-22	ATCACGTTGCGCAGCGGGTG
MB-ODN5/5-23	AAATCGTCTCGAGGCGTTCC
MB-ODN5/5-24	GTGGCGCAGCGTGGCGGTGG
MB-ODN5/5-25	TGGGCGCAGCGGCACGCTAT
MB-ODN5/5-26	TCTGCGCAGCGCATCGTTGA
MB-ODN5/5-27	TGGGCGCAGCGTTACGAACT
MB-ODN5/5-28	GCCTCGCAGCGCACGTTGG
MB-ODN5/5-29	TTGGCGCAACGCATCGAGA
MB-ODN5/5-30	GGAGCGCAACGTTGCGCATC
MB-ODN5/5-31	ACAACGCATCGCATCGAGGA
MB-ODN5/5-32	AGCACGCTGCGGGTCGTCAG
MB-ODN5/5-33	ACTGCGCTGCGGCACGACCC
MB-ODN5/5-34	GTCTCGCTGCGCAGCGGGT
MB-ODN5/5-35	GGCACGCTGCGTCACGTGGT
MB-ODN5/5-36	CTGACGCCTCGGCTCGAGCT

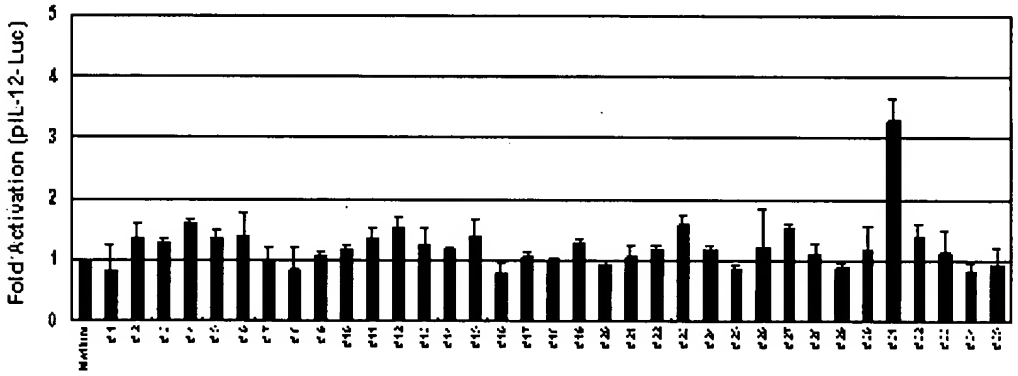
FIG. 4

a)



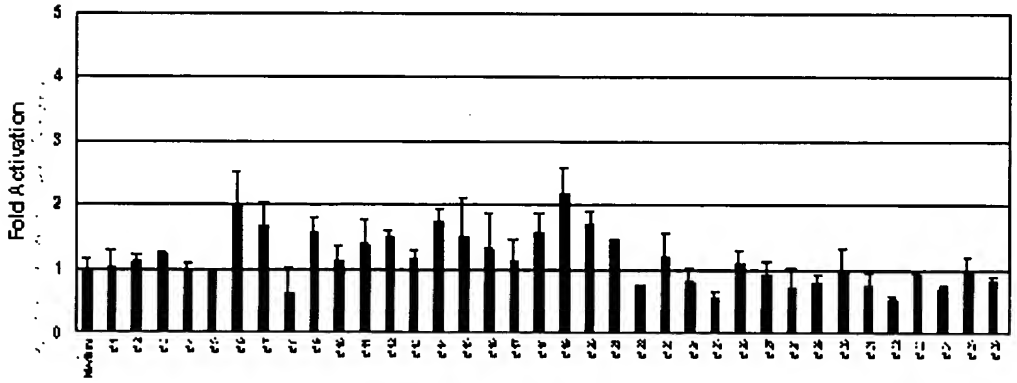
MB-ODN 4/5

b)



MB-ODN 4/5

c)



MB-ODN 5/5

FIG. 5

a)

ODN	Sequence
MB 4/5 #31	AGCAGCGTTCGTGTCGGCCT
#31.1	CAGCTCGTTCGTGTCGTGCT
#31.2	TGTGGCGTTCGTGTCGGTCT
#31.3	TGCAACGTTCGTGTCGCCAC
#31.4	GGCCACGTTCGTGTCGGTAG
#31.5	GAACACGTTCGTGTCGGAAC
#31.6	CAGCACGTTCGTGTCGGACA
#31.7	TATGTCGTTCGTGTCGTCTT
#31.8	AAGGGCGTTCGTGTCGCTTG
#31.9	ATTTGCGTTCGTGTCGATTC
#31.10	GGTGGCGTTCGTGTCGTCAT
#31.11	ATGGGCGTTCGTGTCGATCC
#31.12	GTATTCGTTCGTGTCGTCCT
#31.13	GGGAACGTTCGTGTCGGTGC
#31.14	TGACTCGTTCGTGTCGCATG
#31.15	GTCATCGTTCGTGTCGAGAC
#31.16	TTGCACGTTCGTGTCGATGA
#31.17	CAGCACGTTCGTGTCGGTCA

b)

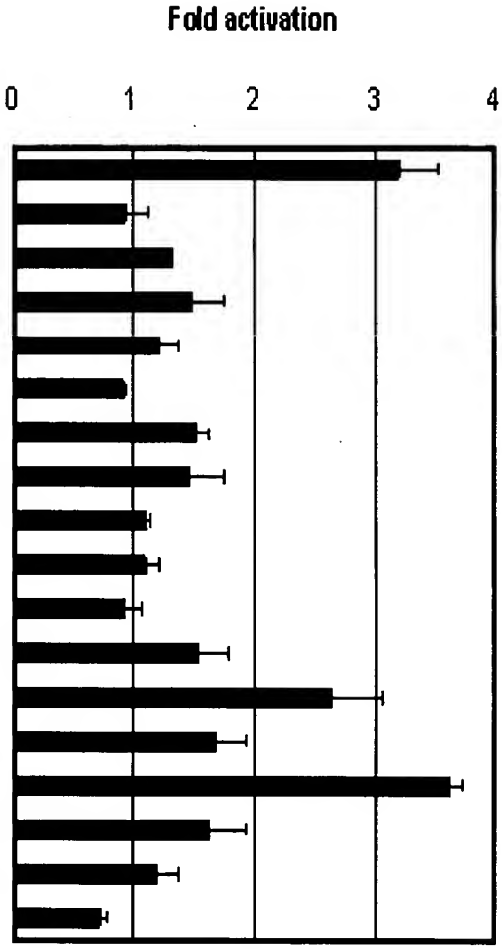


FIG. 6

a)

ODN	Sequence
MB-ODN 31(O)	AGCAGCGTTCGTGTCGGCCT
MB-ODN 31(M)	AGCGTTCGTGTCGGC
#31-CG-1	AGCAGGCTTCGTGTCGGCCT
#31-CG-2	AGCAGCGTTGCTGTCGGCCT
#31-CG-3	AGCAGCGTTCGTGTGCGCCT
#31-CG-4	AGCAGGCTTGCTGTCGGCCT
#31-CG-5	AGCAGGCTTCGTGTGCGCCT
#31-CG-6	AGCAGCGTTGCTGTGCGCCT
#31-CG-7	AGCAGGCTTGCTGTGCGCCT
#31-A-1	AGCAGCATTCGTGTCGGCCT
#31-A-2	AGCAGCTTTCGTGTCGGCCT
#31-A-3	AGCAGCCTTCGTGTCGGCCT
#31-B-1	AGCAGCGTTCATGTCGGCCT
#31-B-2	AGCAGCGTTCTTGTCGGCCT
#31-B-3	AGCAGCGTTCCTGTCGGCCT
#31-C-1	AGCAGCGTTCGTGTCAGCCT
#31-C-2	AGCAGCGTTCGTGTCTGCCT
#31-C-3	AGCAGCGTTCGTGTCCGCCT
#31-D-1	AGCAGCATTCATGTCGGCCT
#31-D-2	AGCAGCATTCGTGTCAGCCT
#31-D-3	AGCAGCGTTCATGTCAGCCT

b)

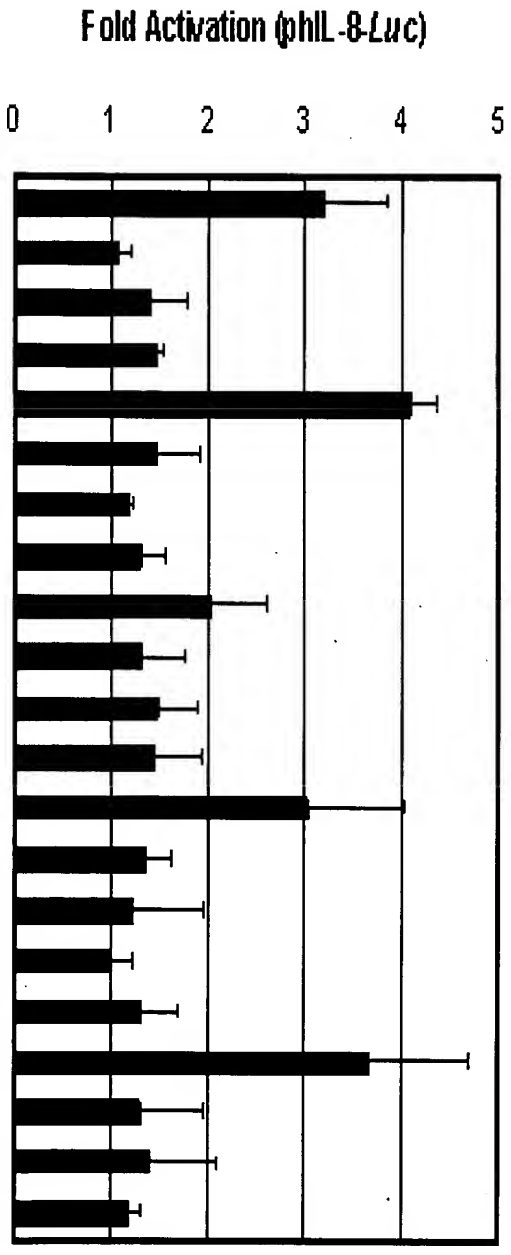


FIG. 7

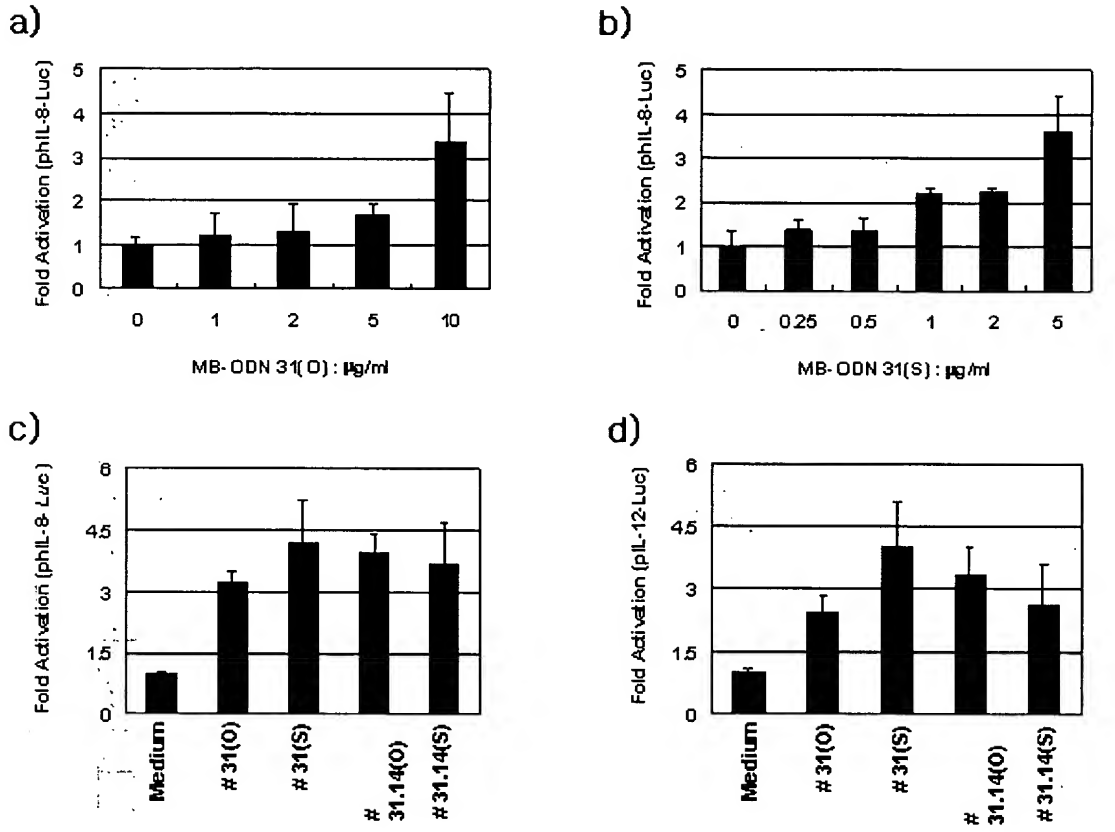

a)
Fold Activation (phIL-8-Luc)
0
1
2
3
4
5
0
1
2
5
10
MB-ODN 31(O) : μg/ml
b)
Fold Activation (phIL-8-Luc)
0
1
2
3
4
5
0
0.25
0.5
1
2
5
MB-ODN 31(S) : μg/ml
c)
Fold Activation (phIL-8-Luc)
0
1.5
3
4.5
6
Medium
31(O)
31(S)
31.14(O)
31.14(S)
d)
Fold Activation (pIL-12-Luc)
0
1.5
3
4.5
6
Medium
31(O)
31(S)
31.14(O)
31.14(S)

FIG. 8

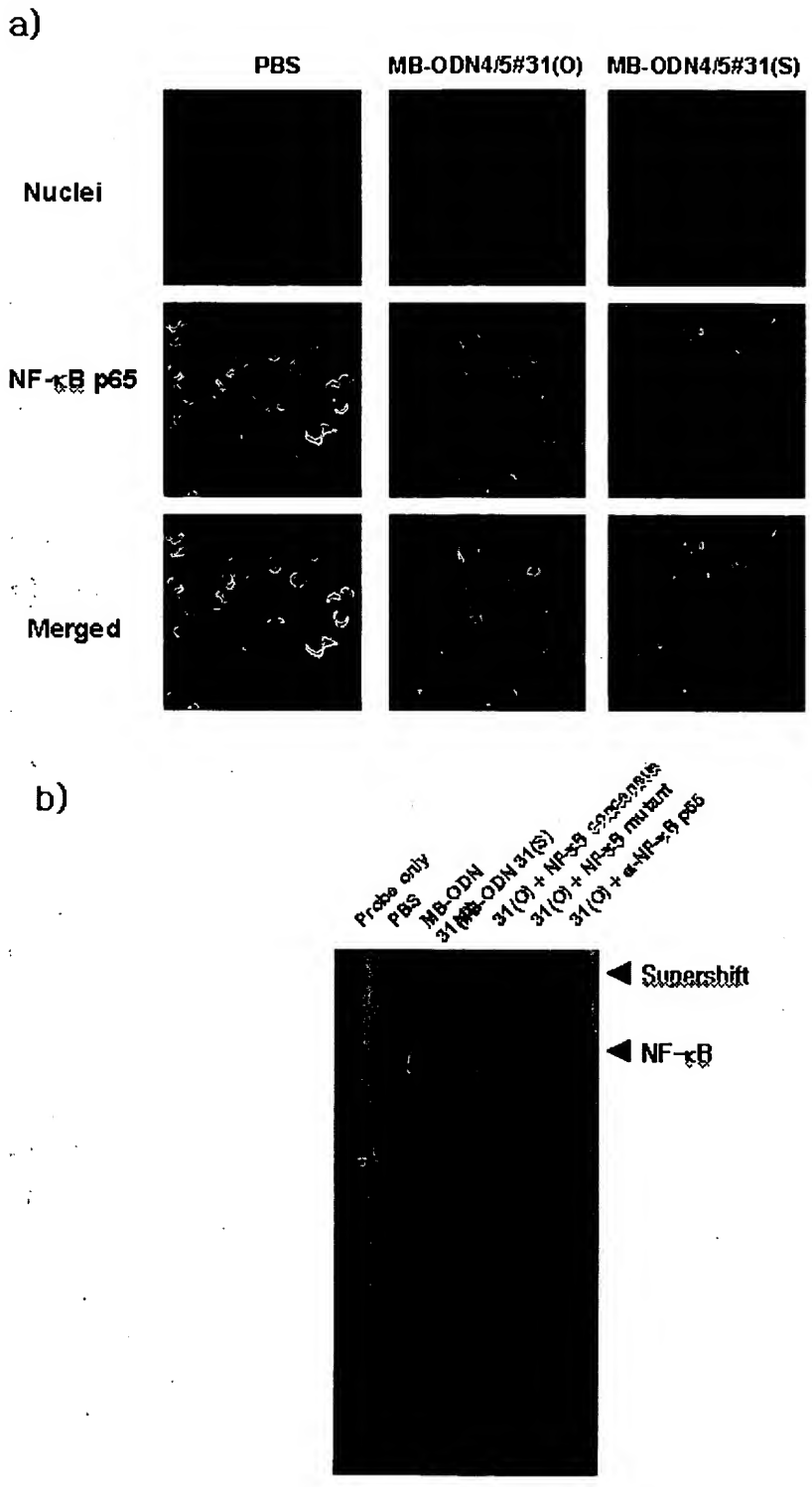

a)
PBS
MB-ODN4/5#31(O)
MB-ODN4/5#31(S)
Nuclei
NF-κB p65
Merged
b)
Probe only
PBS
MB-ODN 31(O)
MB-ODN 31(S)
31(O) + NF-κB consensus
31(O) + NF-κB mutant
31(O) + α-NF-κB p65
Supershift
NF-κB

FIG. 9

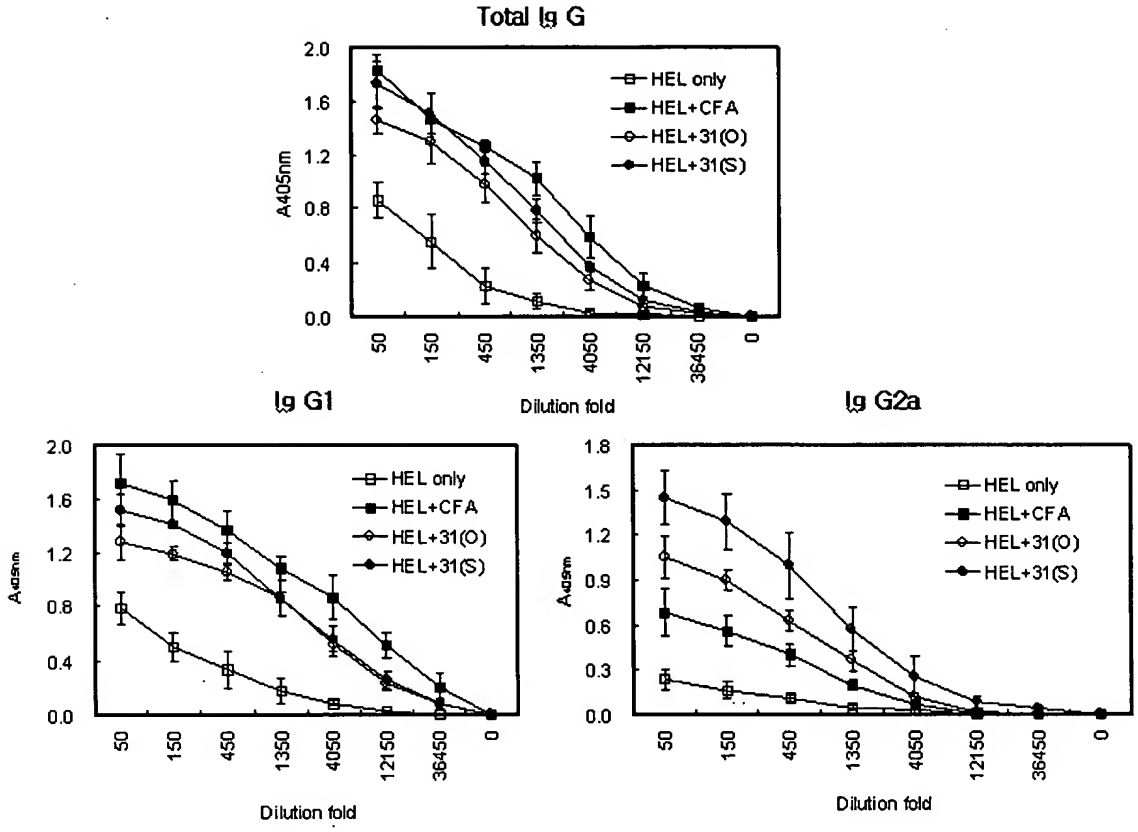

Total Ig G
A405nm
HEL only
HEL+CFA
HEL+31(O)
HEL+31(S)
Dilution fold
Ig G1
Ig G2a

FIG. 10

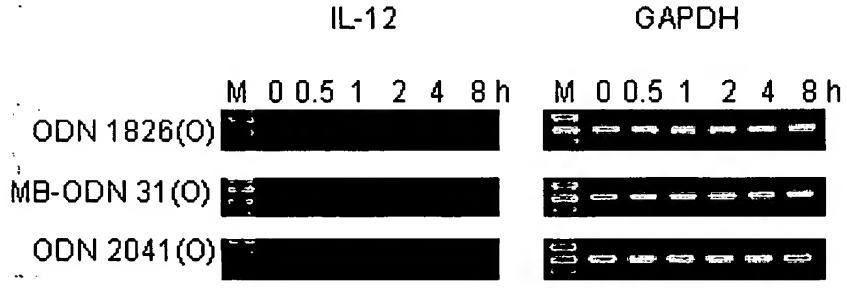

IL-12
GAPDH
M 0 0.5 1 2 4 8 h
ODN 1826(O)
MB-ODN 31(O)
ODN 2041(O)

FIG. 11

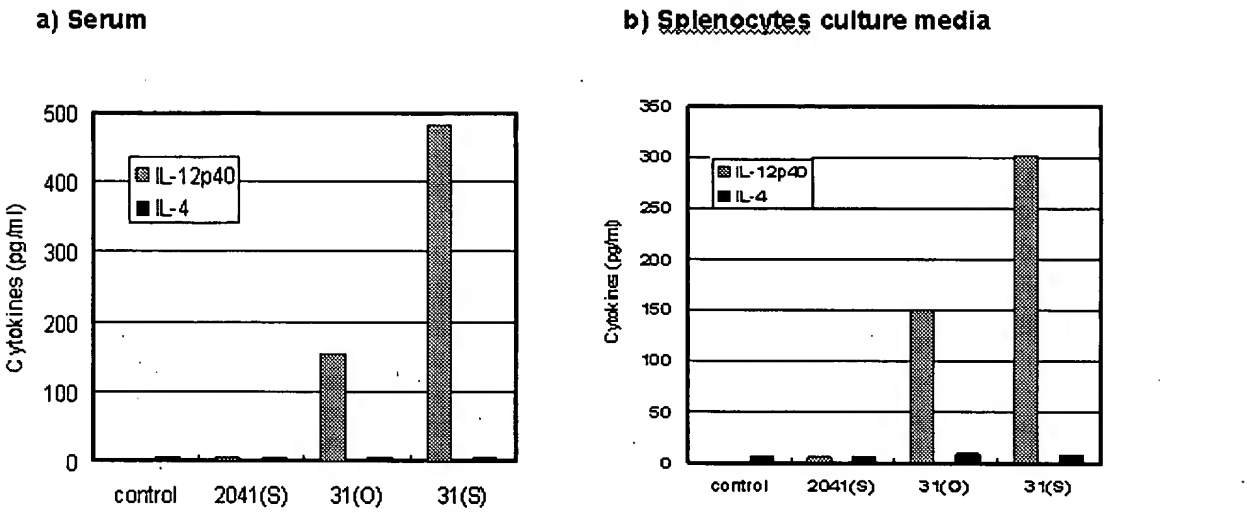

a) Serum
b) Splenocytes culture media
Cytokines (pg/ml)
IL-12p40
IL-4
500
400
300
200
100
0
350
250
150
50
control
2041(S)
31(O)
31(S)

FIG. 12

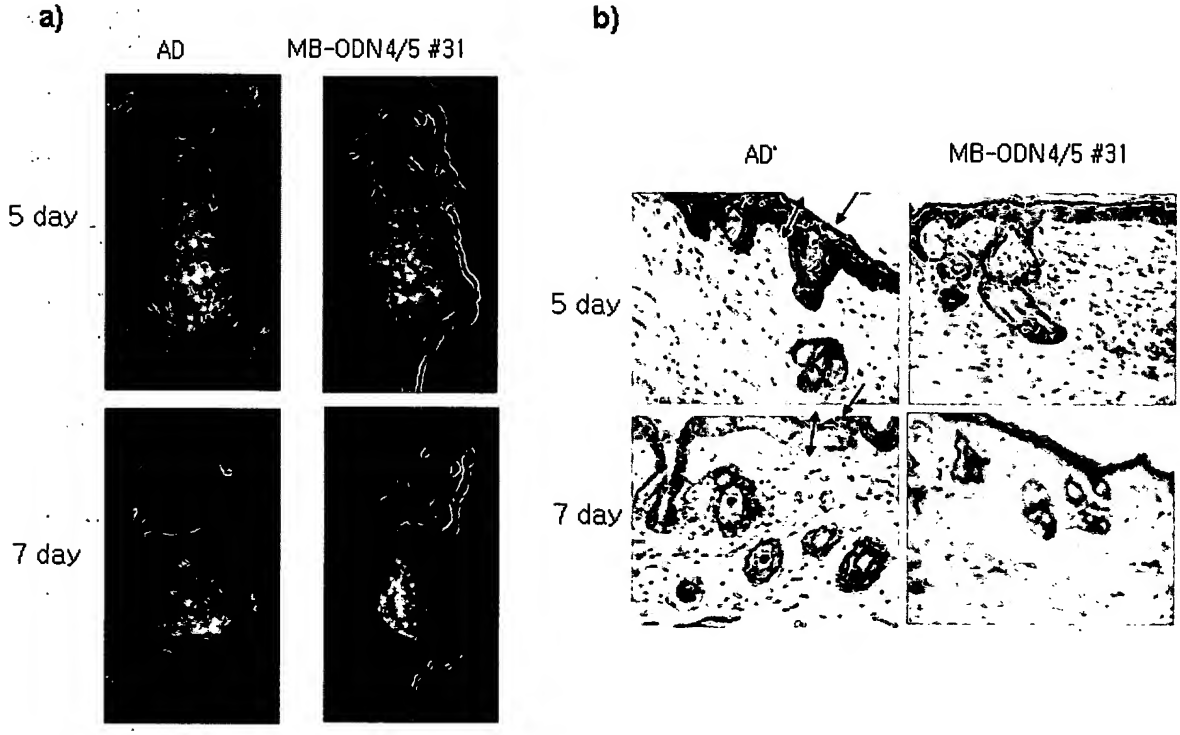

a)
AD
MB-ODN4/5 #31
5 day
7 day
b)
AD
MB-ODN4/5 #31
5 day
7 day

FIG. 13

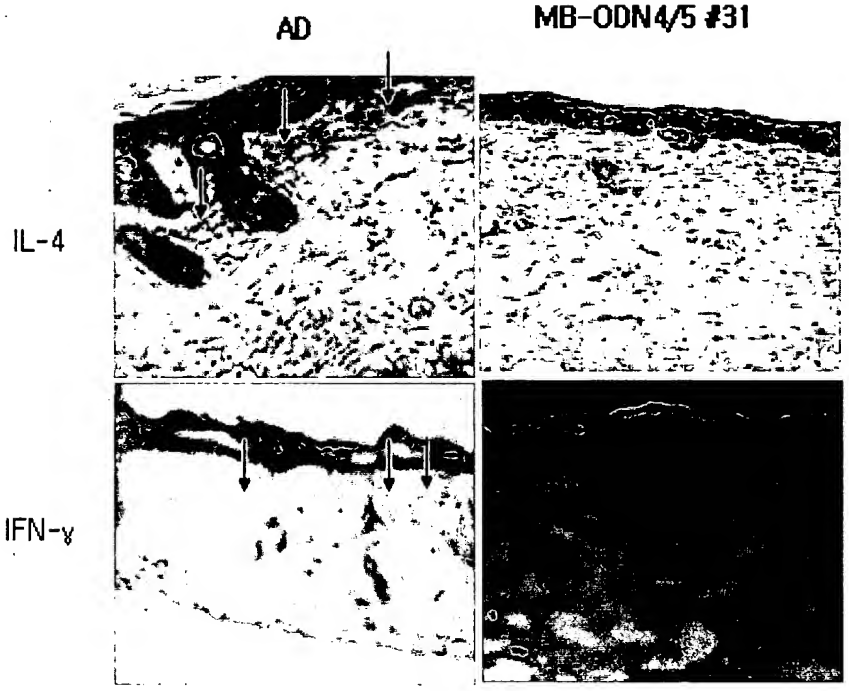


FIG. 14

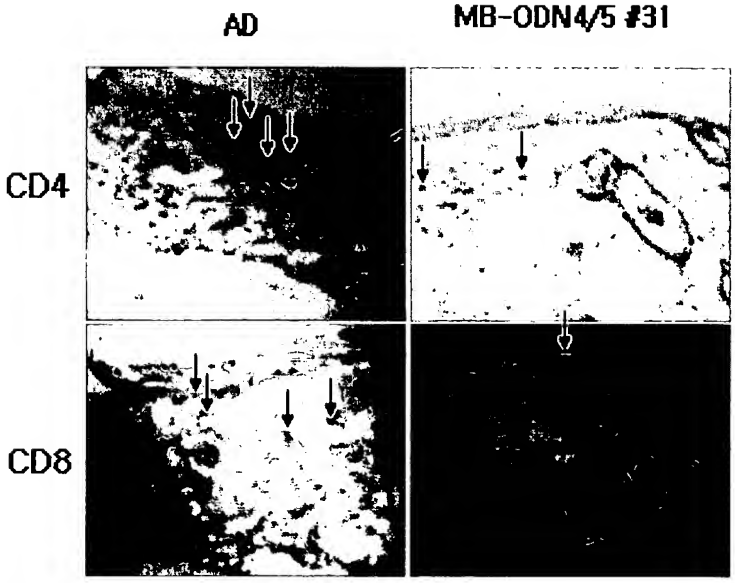


FIG. 15

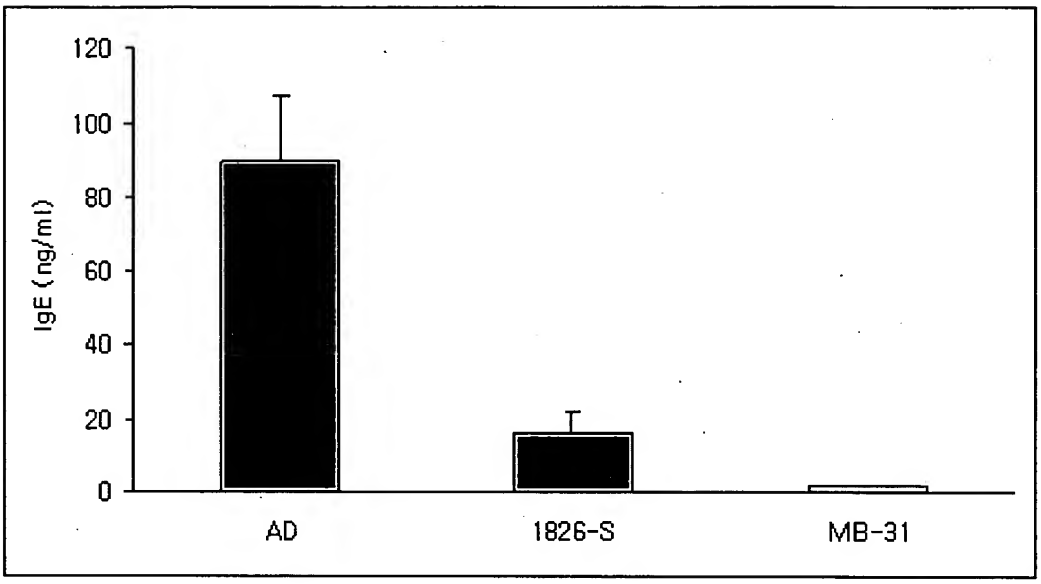

120
100
80
60
40
20
0
IgE (ng/ml)
AD
1826-S
MB-31

FIG. 16

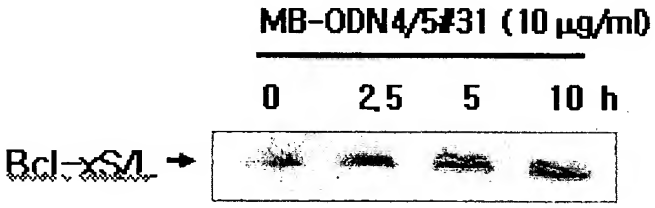

MB-ODN4/5#31 (10 μg/ml)
0
2.5
5
10 h
Bcl-xS/L

FIG. 17

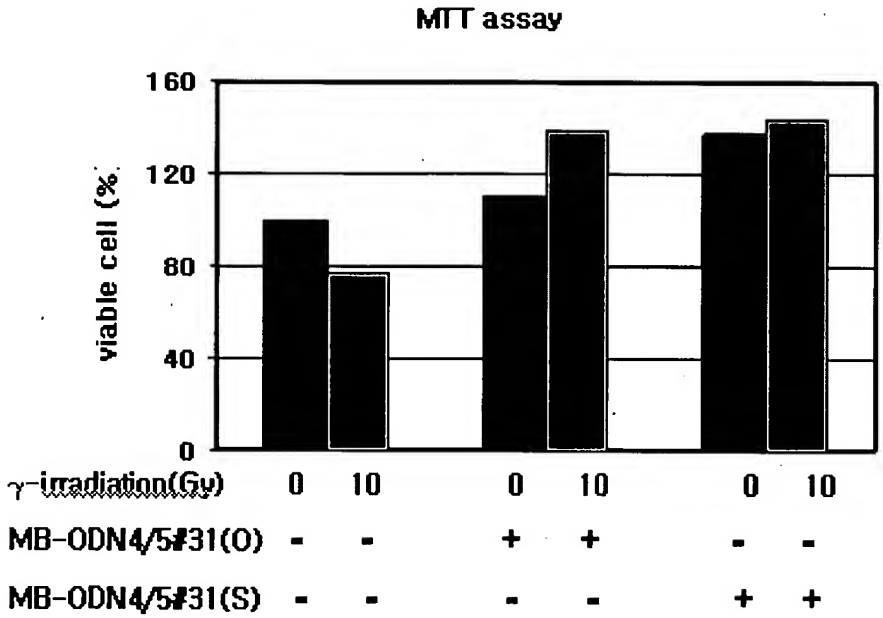
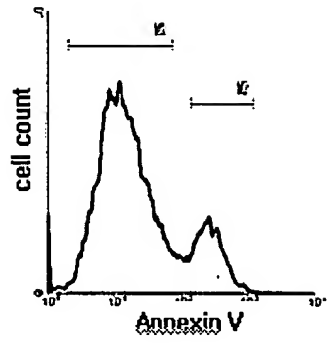
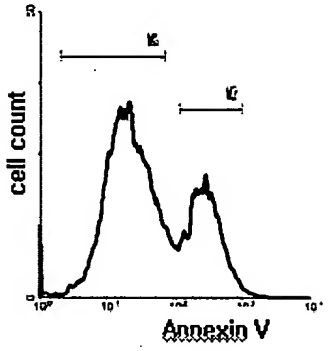

MTT assay
160
120
80
40
0
viable cell (%)
γ-irradiation(Gy) 0 10 0 10 0 10
MB-ODN4/5#31(O) - - + + - -
MB-ODN4/5#31(S) - - - - + +

FIG. 18

A) Control, 0 Gy



B) Control, 10 Gy



C) MB-ODN4/5#31(S), 10Gy

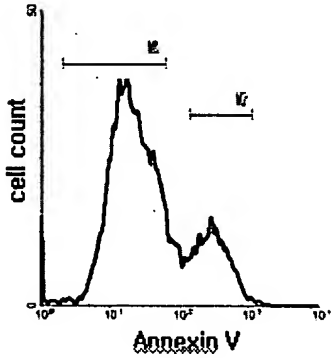
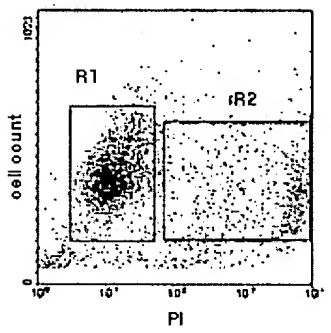


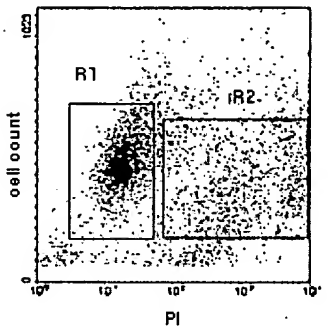
Fig.	γ -irradiation	MB-ODN 4/5 #31(S)	Marker	%Total
A	0 Gy	(-)	M1	73.54
			M2	16.709
B	10 Gy	(-)	M1	58.82
			M2	27.24
C	10 Gy	(+)	M1	65.25
			M2	18.71

FIG. 19

A) Control, 0 Gy



B) Control, 10 Gy



C) MB-ODN4/5#31(S), 10Gy

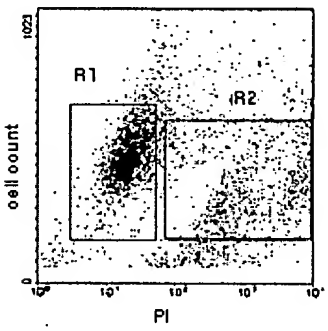


Fig.	γ - irradiation	MB-ODN 4/5 #31(s)	Region	%Total
A	0 Gy	(-)	R1 R2	73.30 16.32
B	10 Gy	(-)	R1 R2	58.93 25.33
C	10 Gy	(+)	R1 R2	62.82 20.92